



Universal Acceptance Day Uruguay - May 26, 2025

Theoretical Session: Key Concepts of Universal Acceptance

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1. Introduction and tone of the session

Carlos Martínez opened with a tongue-in-cheek tone, pointing out that they had come to "spoil the party," demonstrating the complexity behind Universal Acceptance (UA), in contrast to the optimistic vision presented by other speakers. He stated that, although he had historically been a skeptic, upon delving deeper into the topic, he discovered a much greater technical complexity than is often acknowledged.

2. What is Universal Acceptance?

Antoniello defined AU as:

- The ability for all systems and applications to accept and process domain names and email addresses in any script (not just ASCII).
- The key is to allow the use of local languages and special characters, and to recognize that ASCII does not even fully represent English.

DNS that only accepted ASCII to one that, through **encodings such as UTF-8 and Punycode**, can handle multiple alphabets was explained.

3. Justification and benefits of the AU

- **Linguistic diversity and inclusion** : access for non-Latin speakers.
 - **Cultural identity** : Many people want to use their native language in their digital IDs.
 - **Innovation and competition** : improving user experience and expanding the market.
 - **Public policies** : Governments can promote this diversity through regulatory frameworks.
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4. Technical explanation of the Domain Name System (DNS)

- **DNS as the “Internet phonebook”** : translates names into IP addresses.
 - Originally it only accepted ASCII, which limited language representation.
 - The challenge is how to go from ASCII-only names to names in any language.
 - **UTF-8** and **Punycode** are used to translate Unicode characters into a form that can be used in DNS.
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5. History of coding systems

Carlos Martínez explained in detail:

- ASCII is born from the TELEX system: a 7-bit encoding for reasons of efficiency and cost.

- Over time it expanded to 8 bits and then Windows “code pages” arrived to represent different languages.
 - Unicode emerges as a standardized solution that seeks to represent all possible characters (up to 1.1 million).
 - **UTF-8, UTF-16, and UTF-32** formats appear , each with different efficiency and compatibility characteristics.
 - **UTF-8** is today the standard for domain names and email addresses.
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6. Encoding in email

Antoniello and Martínez explained how it works:

- An email has three parts: envelope, header, and body.
 - AU focuses on the **envelope** , that is, the sender and recipient addresses.
 - All components in the transmission chain (MUA, MSA, MTA, MDA) are required **to support EAI (Email Address Internationalization)** .
 - If one fails, the message is lost. Some systems respond with a notification, others simply discard the message.
 - The **lack of intermediate support** is one of the biggest technical challenges.
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7. What Universal Acceptance is not

- It does not imply modifying the content of the message (the body can be in any language).
 - It doesn't depend on the subject of the email.
 - It also does not imply the representation of all Unicode (there are restrictions).
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8. IDNA and security

- **IDNA (Internationalized Domain Names in Applications)** establishes rules for which Unicode characters are valid in domains.
- For example, emojis are not allowed in top-level domains (such as .com or .uy).

- **Homograph attacks** : Visually similar characters can be used to spoof sites (e.g., using a Cyrillic letter instead of a Latin one).
 - These concerns have led to additional restrictions to preserve safety.
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9. Tools and checks

- Antoniello demonstrated an online tool from the **Universal Acceptance Steering Group** to check whether a mailing system supports internationalized addresses.
 - Different levels of support can be identified (type 1, type 2).
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10. Current obstacles

- Although **modern DNS servers do support AU** , many **registrars and their web interfaces do not** .
 - The biggest barriers today are not technical but implementation-related: web forms, billing software, staff training, etc.
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11. Conclusion

- They were invited to review both the software and the interfaces offered to the end user.
 - Truly supporting AU requires comprehensive changes, not just technical but also in processes and organizational culture.
 - In the afternoon session, a demo lab would be held to demonstrate this in action.
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